INPUT APPARATUS FOR PERFORMING INPUT OPERATION CORRESPONDING TO INDICATION MARKS AND COORDINATE INPUT OPERATION ON THE SAME OPERATIONAL PLANE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to an input apparatus for selecting an input mode operation in which input positions shown by indication marks are selectively touched and a coordinate input operation can be performed on the same operational plane.

[0003] 2. Description of the Related Art

[0004] Input apparatuses for mobile phones or the like are provided with an push-button-type input unit used for various operations, for example, for inputting telephone numbers, connecting/disconnecting lines, etc.

[0005] Recently, mobile phones have been commonly used for establishing connections to the Internet, and various kinds of services have been provided via mobile phones. Accordingly, various kinds of menus are shown on displays of mobile phones and operations of selecting from such menus are frequently performed.

[0006] In order to select an item from a menu, input apparatuses of the known art are provided with a push-type or stick-type input unit for inputting directions in addition to the above-described push-button-type input unit. The push-type or the stick-type input unit is used for moving a mark to a position indicating an item selected from a menu.

[0007] However, in input apparatuses of the known art, since the input unit for selecting an item from a menu is provided separately from the push-button-type input unit, there is a problem in that operability is degraded. In addition, since the direction in which the mark indicating the selected item is moved on a menu is limited to the vertical direction and the horizontal direction, it is difficult to quickly select an item from a menu. In addition, it is impossible to input hand-written characters by using the above-described input unit.

SUMMARY OF THE INVENTION

[0008] In order to overcome the above-described problems, an object of the present invention is to provide an input apparatus in which an operation of pushing a predetermined input position, moving a cursor for selecting an item from a menu, and inputting hand-written characters can be performed without degrading the operability of the input apparatus.

[0009] In addition, another object of the present invention is to provide an input apparatus in which an operator reliably recognizes that he or she has pushed an indication mark.

[0010] According to the present invention, an input apparatus includes an input unit with which a coordinate input operation is performed and which includes indication marks which indicate a plurality of input positions, and a control unit which receives an input signal from the input unit and generates an operation signal in accordance with the input signal, wherein the control unit recognizes the input signal obtained from the input unit as coordinate data, and when one of the indication marks is touched individually, the control unit generates an operation signal corresponding to an item indicated at the corresponding input position.

[0011] The input unit may include, for example, a flat input device with which the coordinate input operation is performed and the indication marks formed on the surface of the flat input device.

[0012] When a position of contact on the input unit moves, the control unit recognizes the movement of the position of contact as coordinate data.

[0013] In addition, according to the present invention, an input apparatus includes an input unit which is flat and with which a coordinate input operation is performed, indication marks which are formed on the surface of the input unit and which indicate a plurality of input positions, and a control unit which receives an input signal from the input unit and generates an operation signal in accordance with the input signal, wherein, when a predetermined input mode is set, the control unit detects that one of the input positions is touched and generates an operation signal corresponding to an item indicated at the corresponding input position, and when another input mode is set, the control unit recognizes the input signal obtained from the input unit as coordinate data irrespective of items indicated at the input positions.

[0014] The above-described input apparatus of the present invention may also include a display unit. When the control unit recognizes the coordinate data, the display means shows a display according to the coordinate data, and when one of the indication marks is touched, the display means shows a character, a symbol, or a number corresponding to the touched indication mark.

[0015] According to the present invention, both the input operation corresponding to input positions shown by the indication marks and the coordinate input operation irrespective of the indication positions are performed on the same operational plane. Accordingly, various kinds of input operations are possible.

[0016] Preferably, the input apparatus further includes a tactile-feel-generating unit which generates a reaction force when one of the indication marks is pushed.

[0017] The tactile-feel-generating unit may include multiple tactile-feel-generating members which are disposed at positions corresponding to the indication marks, or be formed of a single tactile-feel-generating member disposed behind the input unit.

[0018] The tactile-feel-generating members may be formed of dome-shaped inversion plates placed behind the input unit.

[0019] Accordingly, the operator reliably recognizes that he or she has pushed the indication mark, so that input failure due to insufficient pressing force can be prevented and the input operation can be reliably performed.

[0020] In addition, the inversion plates may also serve to generate a switch input.

[0021] In such a case, since the switch input is not generated until one of the inversion plates is inverted, input operation does not occur by merely touching the indication marks.